



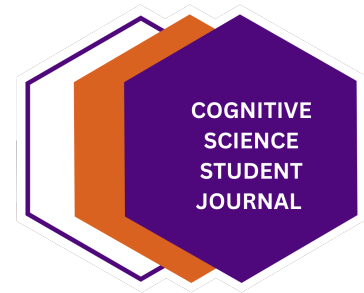
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Sleep and Wellbeing - How Does the Sleep Quality Influence Our Hedonic and Eudaimonic Wellbeing?

Patricia Groß



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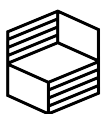
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Institut für Kognitionswissenschaft
Universität Osnabrück
49069 Osnabrück
Germany
<https://www.ikw.uni-osnabrueck.de>

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1 Introduction

Most people agree that wellbeing is important, many even think it is the most important thing at all. Furthermore, most people agree that sleep is important. However, surprisingly little wellbeing research include sleeping parameters. For example, Diener et al. (2018) note that the Guidelines for National Indicators of Subjective Well-Being and Ill-Being do not even include the word sleep.

2 Related Work

Subsequently, a brief overview is given over related work in the two areas sleep and wellbeing, in particular hedonic and eudaimonic wellbeing.

2.1 Sleep

One reason, why many consider sleep as important is because with 7-9h per day we sleep about a third of our lifetime (Sun & Truong, 2023). However, not only quantitative aspects of sleep highlight the importance of sleep. Although not fully understood, sleep improves many physical and cognitive functions (Assefa et al., 2015). Examples for physical aspects that benefit from sleep are physical recovery, the immune system and metabolic balance (Xie et al., 2013). Cognitive advantages include increased neuro-cognitive performance, regulating emotions and an improved memory (Vandekerckhove & Wang, 2018).

2.2 Wellbeing

In the last years the scientific interest in the concept of wellbeing has rapidly increased. The core assumption among wellbeing researcher is that wellbeing is more than just the absence of illness. While in the past, life satisfaction has often been used synonymous to wellbeing and happiness, there are more complex theories and measurement methods nowadays (Diener, 2006). Nobascholars Handbook of Well-Being (Diener et al., 2018, pp.1-3), as an inherent preference (Tu & Hsee, 2018) and as a desire (Hofmann et al., 2018). One thing, those theories have in common is that they are exclusively focusing on subjective wellbeing. However, many researcher claim that there is more than subjective wellbeing (Vittersø, 2016). They usually distinguish between hedonic wellbeing and eudaimonic wellbeing. But even theories about hedonic and eudaimonic wellbeing differ, especially when it comes to eudaimonic wellbeing. This study is based on the functional wellbeing approach (Vittersø, 2018).

2.3 Hedonic wellbeing

Hedonic wellbeing is often used interchangeably with the term subjective wellbeing. The typical subjective wellbeing definition consists of presence of positive affect, absence of negative affect and a favorable evaluation of life as a whole (Ryff et al., 2004). Positive affects comprise pleasurable feelings such as happiness, tranquility and enjoyment. Likewise negative affects comprise unpleasurable feelings such as unhappiness and stress. The evaluation of a life as a whole is synonymous to the concept of life satisfaction (Vittersø, 2018).

2.4 Eudaimonic wellbeing

Eudaimonic wellbeing comprises opportunity feelings and reflective judgments (Vittersø, 2018). Examples for opportunity feelings are engagement, interest and awe. Reflective judgments are opera-

tionalized as wisdom, morality and personal growth. Moreover, these reflective judgments are not purely subjective, but comprise objective elements as well, which clearly separates them from the subjective account of hedonic well-being.

3 Previous Studies

A previous study by Ryff et al. (2004) indicated a positive relationship between eudaimonic well-being and sleep, which was not present between hedonic well-being and sleep. They investigated the relationship between both well-being types with respect to several biomarkers – neuroendocrine, immune and cardiovascular correlates – and sleep. Importantly, the sample (n=135) exclusively comprises aging women (61-91 years). The Nightcap questionnaire was used to measure the sleeping quality by providing indices of time awake, time in REM and non-REM sleep, body movement and sleep duration. Hedonic well-being was measured in terms of positive and negative affects, while eudaimonic well-being was measured by Ryff's 6 factor model, which comprises positive relations, purpose in life, environmental mastery, self-acceptance, autonomy and personal growth (Van Dierendonck et al., 2008). Women with a high score in environmental mastery, the ability to control everyday affairs and create situations to benefit personal needs, had longer times in bed, sleep duration and REM sleep, and earlier onset of the first REM-phase. Further, women with high scores in positive relationships and purpose in life showed less body movement. The other eudaimonic and all hedonic well-being markers showed no significant correlation. As a conclusion, Ryff et al. (2004) found a positive correlation between some of the eudaimonic well-being markers and certain sleep aspects, which were not present in hedonic well-being markers. On the other hand, a study from Shin and Kim (2018) showed a positive correlation between sleep quality and life satisfaction. Their sample consisted of 239 undergraduate students (female=112, Mage=20.61, SDage=1.06). Sleep quality was measured with the Pittsburgh Sleep Quality Index, which asked about the quality of the sleep during the past month with regard to seven components – subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction (Shahid et al., 2011a). Life satisfaction was measured with a single item – "In general, how satisfied are you with your life?". In addition, they measured personality with a 25-item version of the Big 5 model, and one's perceived socioeconomic status, where participants ranked their household income on a 1 to 10 scale. Even then controlling for personality and perceived socioeconomic status, there was a positive correlation between sleep quality and life satisfaction. As life satisfaction belongs to hedonic well-being, this can be seen as indicator for sleep being part of hedonic well-being. Moreover, there exist several studies showing a positive correlation between negative sleep-indicators, such as short sleeping time, and negative well-being indicators, such as low happiness or life dissatisfaction (Paunio et al., 2009; Zhao et al., 2019). This seems to be another indicator for a positive correlation between sleep and well-being. As an intermediate summary, there are only few studies on the relationship between sleep and well-being, if taking a well-being theory into account, which consists of more than life satisfaction. Further, the few existing studies showed no clear picture whether sleep should be associated with hedonic well-being, eudaimonic well-being or both.

4 This study

The aim of this study is to provide more empirical data about the influence good sleep has on hedonic and eudaimonic well-being. The hypothesis is, that an improved sleeping quality increases well-being (without specifying the type of well-being). Further, an exploratory analysis should clarify whether sleep belongs to hedonic well-being, eudaimonic well-being or both.

5 Method

To summarize the methodology used, the participant selection as well as the experimental design will be explained and discussed in this section.

5.1 Participants

The recruitment happened through university e-mailing lists of Cognitive Science students of the University of Osnabrück. The students were able to gain course credits for participation. The final sample consisted of 97 participants ($M_{age} = 20.1$, $SD_{age} = 1.6$, female=53).

5.2 Experimental design

The complete study was conducted at home. After giving their informed consent, the baseline sleeping quality and wellbeing was measured with an online survey – the average estimation time for the survey was estimated to be about 10 minutes. Then a randomized half of the participants ($n=49$) got help to improve their sleeping quality, while the other half served as a control group. The experimental group received information how they can improve their sleep quality (e.g. about the circadian rhythm, the influence on temperature of the sleeping room and daylight exposure). Further, they were encouraged to integrate the gained knowledge in their life and the possibility to get individual support how to do this. The control group was not manipulated at all. After one month the same sleeping and wellbeing measurements from the beginning took place again.

6 Measures

In the following, the reasoning underlying the sleeping measurement and wellbeing measurement is discussed and elaborated on.

6.1 Sleeping measurement

The sleep quality scale (Shahid et al., 2011b) was used for measuring the sleeping quality. The sleep quality scale was used as it had been validated with participants from 18-59 years (Shahid et al., 2011b), which fits most student's age. In contrast, for example the Pittsburgh Sleep Quality Index had been validated with participants from 24-83 years (Shahid et al., 2011a). The sleep quality scale consisted of 28 items, covering six domains: daytime symptoms, restoration after sleep, problems initiating and maintaining sleep, difficulty waking and sleep satisfaction. It used a four point verbal Likert scale, where participants marked how frequently they exhibited certain sleep behaviors (rarely, sometimes, often, almost always). Further the following frequencies were given to obtain more compatible results: rarely: none or 1-3 times a month, sometimes: 1-2 times a week, often: 3-5 times a week, almost always: 6-7 times a week. An example item read as follows: "I have difficulty falling asleep".

6.2 Wellbeing measurement

The wellbeing measurement comprised several parts. It started with a 6-item version of the Basic Emotion Trait Test (Vittersø et al., 2009), which consisted of three hedonic (happiness, joy, contentment) and three eudaimonic (engagement, inspiration, interest) items. Each item asked how often participants experienced the respective emotion during the last two weeks. Answers were given on an end-point labeled numerical scale from 1 (not at all) to 7 (all the time). Next, life satisfaction

was measured with a single item (“All things considered, how satisfied are you with your life as a whole nowadays?”). Responses were collected on an end-point numerical scale from 0 (extremely dissatisfied) to 10 (extremely satisfied). Finally, personal growth was measured with an 8-item version of the Personal Growth Composite (Vittersø & Sørholt, 2011). An example item looked like this: “I enjoy tackling problems that are completely new to me”. Responses were given on a verbal 5-point Likert scale (disagree strongly, disagree a little, neither agree nor disagree, agree a little, agree strongly). Hedonic wellbeing was calculated as a composite score, based on the hedonic items from Basic Emotion Trait Test and the life satisfaction score. Likewise, eudaimonic wellbeing was calculated as a composite score, based on the eudaimonic items from Basic Emotion Trait Test and the personal growth items.

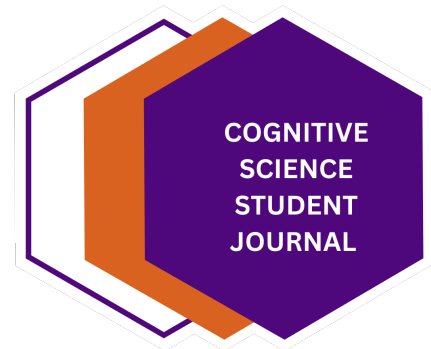
7 Analysis

The following validity checks took place: It was checked that the sleep quality of the experimental group improved (one sided t-test). Likewise it was checked that the sleep quality and the wellbeing scores of the control group did not change (two sided t-tests). For investigation of the hypothesis—improved sleep quality leads to an improved wellbeing – two-sided t-tests for hedonic and eudaimonic wellbeing were conducted, respectively.

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